The following chemical procedures have been found by the W.F.A. laboratory to be simple, rapid, accurate and capable of precise duplication. The solids determination procedure does not require a vacuum chamber. Comparative studies on the chemical methods and the Official A.O.A.C. show good agreement for all commercial purposes. Samples that do not meet the specification requirements with these modified chemical methods are further tested in accordance with "Methods of Analysis" of the Association of Official Agricultural Chemists. No samples of egg powder are chemically rejected on the modified methods described below.

THE CHEMICAL ANALYSES OF DRIED EGGS

Total Solids

Accurately weigh 2 grams of a well mixed sample in a tared covered aluminum dish (1) which had been previously dried at 105-110° C. and cooled in a desiccator. Loosen cover and transfer dish to a thermostatically controlled oven at 105-110° C. At the end of 1 hour 45 minutes, tighten the cover, transfer dish to desiccator and weigh at room temperature. Samples should not be allowed to remain in desiccator overnight, but weighed back as soon as they reach room temperature. Calculate as percentage total solids.
(1) Size of dish is approximately 2" in diameter and 7/8" depth.

Fat by Acid Hydrolysis

Trans fer 1 gram (weighed accurately) of a well mixed dried egg sample into a fat extraction Mojonnier tube. Slowly add 10 ml. of dilute HCl washing down any egg particles that may be adhering to the side of the tube. The dilute HCl is prepared by adding 4 parts of concentrated HCl to 1 part of distilled water.

The extraction tube is set in a water bath of 70° C., the water then brought to a boil and boiling continued for 30 minutes; the tube must be carefully shaken at 5 minute intervals. Remove the tube from the water bath, add water to fill the lower bulb of the tube and then cool to room temperature.

To the treated sample in the extraction tube add 25 ml. of ethyl ether and mix by shaking. Next add 25 ml. of petroleum ether (b.p. 30-60° C.) and again mix by shaking. With a hand centrifuge, rotate the tube 60 turns in a time period of 1 minute. Decant the clear ether layer into a weighed aluminum dish and evaporate the ether slowly on a hot plate. The temperature should be sufficient to allow complete evaporation, but not so high that spattering or vigorous boiling will result. Make a second extraction using the same quantities of each ether and mixing after the addition of each. Centrifuge 60 times, decant the clear ether layer in the aluminum dish and evaporate slowly. If necessary, carefully pour a few ml. of distilled water down the side of the tube just prior to pouring off the second extraction to raise the level of the aqueous layer, so ethers may be completely poured off. It is important that none of the aqueous layer be allowed to run into the aluminum dish. After the ether is entirely evaporated from the aluminum dish, place it in the Mojonnier oven for five minutes with the temperature at exactly 135° C. Transfer and cool to constant weight in the cooling desiccator. In weighing the dishes, both when empty and when containing the extracted fat, they should be at room temperature. This usually requires cooling in the Mojonnier desiccator for 7 to 10 minutes.